

CLAIMS

1. Method for counteracting the occlusion effect of an electronic device delivering an
5 audio signal to the ear, like a hearing aid or and active ear protector, where the
electronic device comprises a transmission path with an external microphone (1) or
input line, which receives a signal p_{ES} from the environment and a signal processor
(2) and a receiver (3) which receives a processed signal from the signal processor (2)
and delivers sound signals to the ear, whereby an ear piece (4) is inserted into the ear
10 canal (5) and totally or partially blocks the canal (5) whereby the sound conditions in
the cavity (6) between the ear piece (4) and the tympanic membrane (7) are directly
or indirectly determined, and whenever conditions leading to occlusion problems are
determined, the transmission characteristic of the transmission path to the receiver
(3) counteracts the occlusion effect.
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2. Method as claimed in claim 1, whereby the conditions leading to occlusion are
determined by monitoring the activity of the users own voice, and when own voice
activity is detected the amplification through the signal processor (2) in the frequency
region below 1 kHz is reduced.
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3. Method as claimed in claim 1, whereby the sound conditions in the cavity (6) are
monitored by an additional microphone (8) which is acoustically coupled to the
cavity (6), whereby the signal from the additional microphone (8) is used in a feed
back loop (9) to the receiver (3) in order to attenuate the low frequency part of the
25 sound in the cavity (6).
4. Method as claimed in claim 3, whereby the signal processor (2) amplifies the low
frequency part of the signal from the external microphone in order to compensate for
the attenuation of the useful part of the signal from the external microphone (1) or
30 input line.

5. Method as claimed in claim 3 or claim 4, whereby the feed back loop (9) from the additional microphone (8) is activated by own voice activity of the user.
6. Method as claimed in claim 1, whereby the sound entering the cavity (6) from the tissue and causing the occlusion sound levels within the cavity (6) is captured by a vibration pick-up (10), and where the vibration signal is filtered in a filter D'_a and combined with the signal which is captured by the external microphone (1) or input line of the device.
7. Method as claimed in claim 6, whereby an inward pointing microphone (8) monitors the sound pressure in the cavity (6), and where this signal is compared with the signal from the external microphone (1) or input line, and where the comparison result is used to control the shape of the filter D'_a .
8. Method as claimed in claim 1 and 2, whereby the detection of own voice activity is carried out by the use of a vibration pick-up (10) in contact with a body portion of the user.